

### Amendments to the Claims

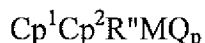
This listing of claims will replace all prior versions and listing of claims in this application.

#### Listing of claims:

What is claimed is:

Claims 1-21 (**Cancelled**)

22. (**Currently Amended**) A olefin polymerization catalyst composition comprising a metallocene catalyst component characterized by the formula:



wherein:

(a)  $\text{Cp}^1$  and  $\text{Cp}^2$  are each independently a substituted or unsubstituted cyclopentadienyl derivative incorporating a cyclopentadienyl ring in the form of a substituted or unsubstituted cyclopentadienyl group, a substituted or unsubstituted indenyl group or a substituted or unsubstituted fluorenyl group wherein at least one of the cyclopentadienyl derivatives  $\text{Cp}^1$  and  $\text{Cp}^2$  incorporates a nitrogen (N) or phosphorus (P) atom in its cyclopentadienyl ring, and wherein at least one of  $\text{Cp}^1$  and  $\text{Cp}^2$  is a substituted or unsubstituted fluorenyl group;

(b)  $\text{R}^n$  is a structural bridge between  $\text{Cp}^1$  and  $\text{Cp}^2$  imparting stereorigidity to the ligand structure provided that when  $\text{Cp}^1$  incorporates a phosphorus atom in its cyclopentadienyl ring and  $\text{Cp}^2$  is free of a phosphorus atom in its cyclopentadienyl ring, the bridge  $\text{R}^n$  is connected to the phosphorus atom in  $\text{Cp}^1$  or to a carbon atom in  $\text{Cp}^1$  which is distal to the phosphorus atom and further provided that when  $\text{Cp}^1$  is a substituted or unsubstituted

indenyl group and  $\text{Cp}^2$  is a substituted or unsubstituted indolyl group, the bridge  $\text{R}''$  is connected to the nitrogen atom of group  $\text{Cp}^2$  or to a carbon atom which is vicinal to the nitrogen atom;

(c) M is a transition metal from Group IIIB, Group IVB, Group VB or Group VIB of the Periodic Table of Elements (CAS Version);

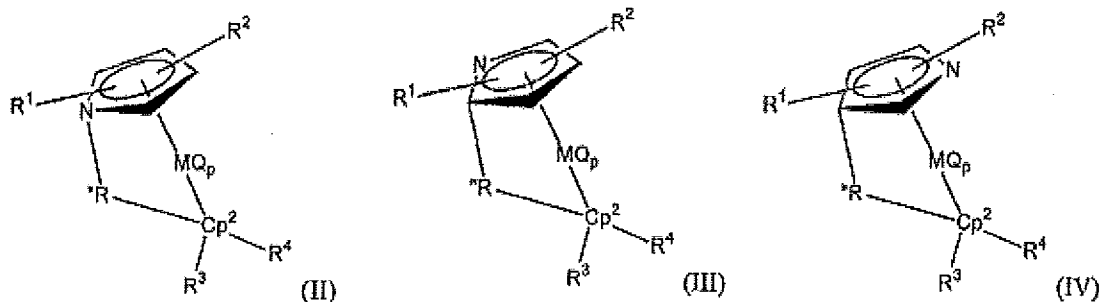
(d) Q is a halogen or a hydrocarbyl group having from 1-20 carbon atoms;  
and

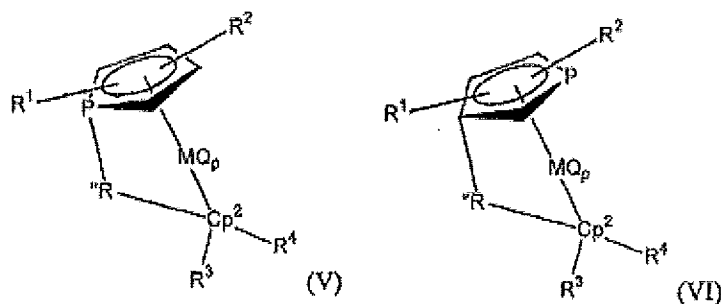
(e) p is equal to the valence of the transition metal M minus 2.

23. **(Previously Presented)** The composition of claim 22 wherein one of  $\text{Cp}^1$  or  $\text{Cp}^2$  incorporates a nitrogen atom in its cyclopentadienyl ring, and  $\text{R}''$  is attached to the nitrogen atom, to a carbon atom vicinal to the nitrogen atom, or to a carbon atom non-vicinal to the nitrogen atom.

24. **(Currently Amended)** The composition of claim 22 in which  $\text{Cp}^1$  and  $\text{Cp}^2$  are each independently ~~a substituted or unsubstituted cyclopentadienyl group, or~~ a substituted or unsubstituted fluorenyl group, wherein at least one of  $\text{Cp}^1$  and  $\text{Cp}^2$  incorporate a nitrogen (N) or phosphorus (P) atom in its cyclopentadienyl ring.

25. **(Previously Presented)** The composition of claim 22 wherein the catalyst component is characterized by one of the following formulas (II) – (VI):





wherein  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  may be the same or different and are selected from the group consisting of a halogen and  $C_1 - C_{20}$  alkyl, aryl, cycloalkyl, alkoxy and silanyl groups.

26. **(Previously Presented)** The composition of claim 22 wherein  $Cp^1$  is a substituted or unsubstituted cyclopentadienyl group and  $Cp^2$  is a substituted or unsubstituted fluorenyl group, wherein at least one of  $Cp^1$  and  $Cp^2$  incorporate a nitrogen (N) or phosphorus (P) atom in its cyclopentadienyl ring.

27. **(Canceled)**

28. **(Previously Presented)** The composition of claim 22 wherein M is Ti, Zr, Hf, or V.

29. **(Previously Presented)** The composition of claim 28 wherein p is 2.

30. **(Previously Presented)** The composition of claim 29 wherein Q is Cl.

31. **(Previously Presented)** The composition of claim 22 wherein  $R''$  is substituted or unsubstituted and is selected from the group consisting of an alkylidene group having from 1-20 carbon atoms, a dialkyl germanium group, a dialkyl silicon group, a dialkyl siloxane group, an alkyl phosphine group and an amine group.

32. **(Previously Presented)** The catalyst of claim 31 wherein  $R''$  comprises an  $Me_2Si$  group or an Et group.

33. **(Currently Amended)** The catalyst of claim 22 wherein at least one of the  $\text{Cp}^1$  and  $\text{Cp}^2$  derivatives are substituted with substituents which are independently selected from the group consisting of aryl groups having from 1-20 carbon atoms, hydrocarbyl groups having from 1-20 carbon atoms, cycloalkyls, silane derivatives, alkoxies and halogens.

34. **(Previously Presented)** The composition of claim 33 wherein said substituents are independently selected from the group consisting of Ph, Bz, Naph, Ind, BzInd, Me, Et, n-Pr, i-Pr, n-Bu, and  $\text{Me}_3\text{Si}$ .

35. **(Previously Presented)** The composition of claim 34 wherein the substituents are methyl groups.

36. **(Previously Presented)** The composition of claim 22 wherein the metallocene catalyst component is immobilized on a solid support.

37. **(Previously Presented)** The composition of claim 22 further comprising an aluminum- or boron-containing co-catalyst capable of activating the catalyst component.

38. **(Previously Presented)** The composition of claim 22 wherein  $\text{Cp}^1$  incorporates a nitrogen or phosphorus atom and is a cyclopentadienyl group or an indenyl group which is substituted or unsubstituted and  $\text{Cp}^2$  is a substituted or unsubstituted fluorenyl group.

39. **(Previously Presented)** The composition of claim 38 wherein  $\text{Cp}^1$  is a substituted or unsubstituted cyclopentadienyl group and  $\text{Cp}^2$  is a fluorenyl group with at least one substituent at the 3- or 6-position, or at the 2- or 7-position, wherein  $\text{Cp}^1$  incorporates a nitrogen (N) or phosphorus (P) atom.

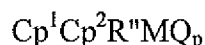
40. **(Previously Presented)** The composition of claim 39 wherein said fluorenyl group is disubstituted with substituents at the 3- and 6-positions or at the 2- and 7-positions.

41. **(Previously Presented)** The composition of claim 40 wherein said substituents are methyl groups.

42. **(Previously Presented)** The composition of claim 22 wherein said catalyst component is selected from the group consisting of:  $\text{Me}_2\text{Si}(\text{pyrrolyl})\text{FluZrCl}_2$ ,  $\text{Et}(\text{pyrrolyl})\text{FluZrCl}_2$ ,  $\text{Me}_2\text{Si}(\text{imidazolyl})\text{FluZrCl}_2$ ,  $\text{Et}(\text{imidazolyl})\text{FluZrCl}_2$ ,  $\text{Me}_2\text{Si}(\text{phospholyl})\text{FluZrCl}_2$ , and  $\text{Et}(\text{phospholyl})\text{FluZrCl}_2$ .

43. **(Currently Amended)** A process for the polymerization of an ethylenically unsaturated monomer comprising:

- (a) providing a metallocene catalyst component characterized by the formula:



wherein:

(i)  $\text{Cp}^1$  and  $\text{Cp}^2$  are each independently a substituted or unsubstituted cyclopentadienyl derivative incorporating a cyclopentadienyl ring in the form of a substituted or unsubstituted cyclopentadienyl group, a substituted or unsubstituted indenyl group or a substituted or unsubstituted fluorenyl group wherein at least one of the cyclopentadienyl derivatives— $\text{Cp}^1$  and  $\text{Cp}^2$  incorporates a nitrogen (N) or phosphorus (P) atom in its cyclopentadienyl ring, and wherein at least one of  $\text{Cp}^1$  and  $\text{Cp}^2$  is a substituted or unsubstituted fluorenyl group;

(ii)  $\text{R}''$  is a structural bridge between  $\text{Cp}^1$  and  $\text{Cp}^2$  imparting stereorigidity to the ligand structure provided that when  $\text{Cp}^1$  incorporates a phosphorus atom in

its cyclopentadienyl ring and  $\text{Cp}^2$  is free of a phosphorus atom in its cyclopentadienyl ring, the bridge  $\text{R}''$  is connected to the phosphorus atom in  $\text{Cp}^1$  or to a carbon atom in  $\text{Cp}^1$  which is distal to the phosphorus atom ~~and further provided that when  $\text{Cp}^1$  is a substituted or unsubstituted indenyl group and  $\text{Cp}^2$  is a substituted or unsubstituted indolyl group, the bridge  $\text{R}''$  is connected to the nitrogen atom of group  $\text{Cp}^2$  or to a carbon atom which is vicinal to the nitrogen atom;~~

(iii) M is a transition metal from Group IIIB, Group IVB, Group VB or Group VIB of the Periodic Table of Elements (CAS Version);

(iv) Q is a halogen or a hydrocarbyl group having from 1-20 carbon atoms; and

(v) p is equal to the valence of the transition metal M minus 2;

(b) providing an activating co-catalyst component;

(c) contacting said metallocene catalyst component and said activating co-catalyst component in a polymerization reaction zone with an ethylenically unsaturated monomer to produce a polymer product by the polymerization of said monomer; and

(d) recovering said polymer product from said reaction zone.

**44. (Previously Presented)** The method of claim 43 wherein said ethylenically unsaturated monomer is ethylene or propylene.

**45. (Previously Presented)** The method of claim 44 wherein said monomer comprises propylene and said polymer product is a polypropylene homopolymer or copolymer.

**46. (Canceled)**